Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

Claim 1. – Claim 25: (canceled)

Claim 26. (new) A composition of matter for use in the formation of alkaline earth-containing materials, comprising:

an isolated compound having the formula MA_2N_x, said compound being a liquid at 60°C and capable of being vaporized,

where M is an alkaline earth metal,

A is a beta-diketonate (or the isoelectronic derivatives thereof) having the formula,

$$R^1C(=O)CR^3C(=O)R^2,$$

where R^1 and R^2 are independently selected and are an alkyl group, a fluoroalkyl group, an alkyl group substituted by other elements, or an aryl group, and R^3 may be hydrogen, an alkyl group, a fluoroalkyl group, or an alkyl group substituted by other elements,

N is an amine having the formula,

$$R^aN(R^b)CH_2CH_2\{N(R^c)CH_2CH_2\}_nN(R^d)R^e,$$

where R^a, R^b, R^c, R^d, and R^e are independently selected and are hydrogen or an alkyl group, a fluoroalkyl group, and alkyl group containing oxygen- or nitrogen-containing species or an aryl group, n is a non-negative integer, and x is one or two, wherein the amine and the beta-diketonate are selected to provide *t* greater than or equal to 3, where *t* is a total

number of carbon-carbon single bonds that rotate alkyl groups with less symmetry than a methyl or a tert-butyl group.

Claim 27. (new) The composition of matter of claim 26, wherein said compound is a liquid at 20°C.

Claim 28. (new) The composition of matter of claim 26, wherein the groups R^1 and R^2 contain four or five carbons.

Claim 29. (new) The composition of matter of claim 26, wherein the group R^3 contains less than two carbons.

Claim 30. (new) The composition of matter of claims 26, wherein the beta-diketonate ligand is chosen from those listed in Table 1 of the specification.

Claim 31. (new) The composition of matter of claim 26, wherein the two A groups of the MA_2N_x compound are different.

Claim 32. (new) The composition of matter of claim 26, wherein n has the value 0, 1 or 2.

Claim 33. (new) The composition of matter of claim 26, wherein n has the value 1.

Claim 34. (new) The composition of matter of claim 26, wherein at least one of the groups R^a, R^b, R^c, R^d, and R^e contains more than one carbon atom.

Claim 35. (new) The composition of matter of claim 26, wherein the amine is selected from Table 2 of the specification.

Claim 36. (new) The composition of matter of claim 26, wherein the alkaline earth comprises magnesium and the compound is chosen from Table 7 of the specification.

Claim 37. (new) The composition of matter of claim 26, wherein the alkaline earth comprises barium and the compound is chosen from Tables 3, 4 and 8 of the specification.

Claim 38. (new) The composition of matter of claim 26, wherein the alkaline earth comprises strontium and the compound is chosen from Table 5 of the specification.

Claim 39. (new) The composition of matter of claim 26, wherein the alkaline earth comprises calcium and the compound is chosen from Table 6 of the specification.

Claim 40. (new) The composition of matter of claim 26, wherein *t* is greater than 10.

Claim 41. (new) The composition of matter of claim 26, wherein *t* is in the range of 3 to about 24.

Claim 42. (new) The composition of matter of claim 26, wherein the compound has a solubility greater than 1 molar in a liquid solvent.

Claim 43. (new) The composition of matter of claim 26, wherein the compound has a solubility greater than 0.5 molar in a liquid solvent.

Claim 44. (new) A process for forming a material containing an alkaline-earth metal, comprising:

providing a liquid consisting essentially of a compound having a formula MA_2N,

where M is an alkaline earth metal,

A is a beta-diketonate (or the isoelectronic derivatives thereof) having the formula,

$$R^1C(=O)CR^3C(=O)R^2,$$

where R^1 and R^2 are independently selected and are an alkyl group, a fluoroalkyl group, an alkyl group substituted by other elements, or an aryl group, and R^3 may be hydrogen, an alkyl group, a fluoroalkyl group, or an alkyl group substituted by other elements, and wherein the two A groups of the compound are the same or different,

N is an amine having the formula,

$$R^aN(R^b)CH_2CH_2\{N(R^c)CH_2CH_2\}_nN(R^d)R^e,$$

where R_a, R_b, R_c, R_d, and R_e are independently selected and are hydrogen or an alkyl group, a fluoroalkyl group, and alkyl group containing oxygen- or nitrogen-containing species or an aryl group, n is a non-negative integer, and x is one or two, wherein the amine and the

beta-diketonate are selected to provide t greater than or equal to 3, where *t* is a total number of carbon-carbon single bonds that rotate alkyl groups with less symmetry than a methyl or a tert-butyl group;

vaporizing the liquid; and

contacting the vapor with a heated surface to deposit a material containing an alkaline earth metal.

Claim 45. (new) The process of claim 44 in which the alkaline earth metal is selected from the group consisting of barium and strontium.

Claim 46. (new) The process claim 44, wherein *t* is greater than 10.

Claim 47. (new) The process of claim 44, wherein *t* is in the range of 3 to about 24.

Claim 48. (new) The process of claim 44, further comprising:

introducing the liquid into a solvent prior to vaporization.

Claim 49. (new) The process of claim 44 or 48, wherein the alkaline earth metal-containing material is deposited under oxidizing conditions.

Claim 50. (new) The process of claim 44, wherein the beta-diketonate ligand is chosen from those listed in Table 1 of the specification.

Claim 51. (new) The process of claim 44, wherein the two A groups of the MA_2N_x compound are different.

Claim 52. (new) The process of claim 44, wherein at least one of the groups R^a, R^b, R^c, R^d, and R^e contains more than one carbon atom.

Claim 53. (new) The process of claim 44, wherein the amine is selected from Table 2 of the specification.

Claim 54. (new) The process of claim 44, wherein the alkaline earth comprises magnesium and the compound is chosen from Table 7 of the specification.

Claim 55. (new) The process of claim 44, wherein the alkaline earth comprises barium and the compound is chosen from Tables 3, 4 and 8 of the specification.

Claim 56. (new) The process of claim 44, wherein the alkaline earth comprises strontium and the compound is chosen from Table 5 of the specification.

Claim 57. (new) The process of claim 44, wherein the alkaline earth comprises calcium and the compound is chosen from Table 6 of the specification.

Claim 58. (new) A process for forming a multimetal oxide material, comprising:

providing a first compound having a formula MA_2N,

where M is an alkaline earth metal,

A is a beta-diketonate (or the isoelectronic derivatives thereof) having the formula,

$$R^1C(=O)CR^3C(=O)R^2,$$

where R^1 and R^2 are independently selected and are an alkyl group, a fluoroalkyl group, an alkyl group substituted by other elements, or an aryl group, and R^3 may be hydrogen, an alkyl group, a fluoroalkyl group, or an alkyl group substituted by other elements, and wherein the two A groups of the compound are the same or different,

N is an amine having the formula,

$$R^aN(R^b)CH_2CH_2\{N(R^c)CH_2CH_2\}_nN(R^d)R^e,$$

where R_a, R_b, R_c, R_d, and R_e are independently selected and are hydrogen or an alkyl group, a fluoroalkyl group, and alkyl group containing oxygen- or nitrogen-containing species or an aryl group, n is a non-negative integer, and x is one or two, wherein the amine and the beta-diketonate are selected to provide t greater than or equal to 3, where *t* is a total number of carbon-carbon single bonds that rotate alkyl groups with less symmetry than a methyl or a tert-butyl group;

providing one or more second metal-containing compounds, wherein the metal of the second compound is a non-alkaline earth metal or an alkaline earth metal that differs from that of the first compound; and

contacting the first and second compounds with a heated surface to deposit a multimetal oxide layer.

Claim 59. (new) The process of claim 58, further comprising:

introducing the first or second compounds into a solvent prior to contact with the surface.

Claim 60. (new) The process of claim 58 or 59, wherein the first compound and second compound are vaporized prior to contacting the vapors of the second compound with the heated surface to deposit multimetal oxide.

Claim 61. (new) The process of claim 58, wherein the first and second compounds are deposited under oxidizing conditions.

Claim 62. (new) The process claim 58, wherein t is greater than 10.

Claim 63. (new) The process of claim 58, wherein t is in the range of 3 to about 24.

Claim 64. (new) The process of claim 58, wherein the beta-diketonate ligand is chosen from those listed in Table 1 of the specification.

Claim 65. (new) The process of claim 58, wherein the two A groups of the MA_2N_x compound are different.

Claim 66. (new) The process of claim 58, wherein at least one of the groups R^a, R^b, R^c, R^d, and R^e contains more than one carbon atom.

Claim 67. (new) The process of claim 58, wherein the amine is selected from Table 2 of the specification.

Claim 68. (new) The process of claim 58, wherein the alkaline earth comprises magnesium and the compound is chosen from Table 7 of the specification.

Claim 69. (new) The process of claim 58, wherein the alkaline earth comprises barium and the compound is chosen from Tables 3, 4 and 8 of the specification.

Claim 70. (new) The process of claim 58, wherein the alkaline earth comprises strontium and the compound is chosen from Table 5 of the specification.

Claim 71. (new) The process of claim 58, wherein the alkaline earth comprises calcium and the compound is chosen from Table 6 of the specification.

Claim 72. (new) The process of claim 59, wherein a sol-gel process is used to contact the first and second compounds with the surface.

Claim 73. (new) The process of claim 59, wherein a spray-coating or spin-coating process is used to contact the first and second compounds with the surface.

Claim 74. (new) The process of claim 58, wherein the second compound comprises a metal or metals selected from the group consisting of, bismuth, niobium, titanium and tantalum, and the multimetal oxide comprises an alkaline earth metal and a one or more of bismuth, niobium, titanium and tantalum.

Claim 75. (new) A composition of matter for use in the formation of alkaline earth-containing materials, comprising:

a compound having the formula MA_2N_x, said compound being a liquid at 60°C and capable of being vaporized,

where M is an alkaline earth metal,

A is a beta-diketonate (or the isoelectronic derivatives thereof) having the formula,

$$R^1C(=O)CR^3C(=O)R^2,$$

where R^1 and R^2 are independently selected and are an alkyl group, a fluoroalkyl group, an alkyl group substituted by other elements, or an aryl group, and R^3 may be hydrogen, an alkyl group, a fluoroalkyl group, or an alkyl group substituted by other elements,

N is an amine having the formula,

$$R^aN(R^b)CH_2CH_2\{N(R^c)CH_2CH_2\}_nN(R^d)R^e,$$

where R^a, R^b, R^c, R^d, and R^e are independently selected and are hydrogen or an alkyl group, a fluoroalkyl group, and alkyl group containing oxygen- or nitrogen-containing species or an aryl group, n is a non-negative integer, and x is one or two, wherein at least one of R^a, R^b, R^c, R^d and R^e contains two or more carbons.

Claim 76. The composition of claim 75, wherein at least one of R^a, R^b, R^c, R^d and R^e contains three or more carbons.

Claim 77. The composition of claim 75,wherein at least one of R^a, R^b, R^c, R^d and R^e is an n-butyl group.

Claim 78. The composition of claim 75, wherein at least one of of R^a, R^b, R^c, R^d and R^e contains five or more carbons.